

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended): An etching apparatus for etching a glass substrate comprising:
 - an etch bath having a bubble plate, the glass substrate immersed in a first etchant, the etch bath containing a residual etchant including a diluted etchant and residue material after the glass substrate is etched with the first etchant, wherein a thickness of the glass substrate is uniformly reduced;
 - a first nitrogen gas supplying pipe for supplying a nitrogen gas to the etch bath;
 - a first nitrogen gas valve at the first nitrogen gas supplying pipe;
 - a first tank connected to the etch bath to supply the first etchant to the etch bath, the concentration of the first etchant being controlled in the first tank;
 - a second tank receiving the residual etchant from the etch bath and separating the diluted etchant from the residue material, the second tank being connected to the first tank to provide the separated diluted etchant to the first tank;
 - a connecting passage directly connecting the first and second tanks and directly transferring the separated diluted etchant from the second tank to the first tank;
 - an outlet pipe attached to the second tank, the outlet pipe discharging the residue material;
 - a concentration measuring device disposed at the first tank for measuring a concentration of a first etchant in the first tank;
 - a temperature sensor installed in the etch bath, the temperature sensor measuring and monitoring a temperature of the etchant while the glass substrate is etched in the etch bath based on the to temperature information from the temperature sensor;
 - a rinse bath for cleaning the glass substrate that is etched in the etch bath;
 - a second nitrogen gas supplying pipe for supplying the nitrogen gas to the rinse bath;
 - a second nitrogen gas valve at the second nitrogen gas supplying pipe;
 - a dry bath for drying the glass substrate that is rinsed at the rinse bath;

a heater within the dry bath;

an isopropyl alcohol supplying pipe for supply an isopropyl alcohol to the dry bath;

a control unit controlling the first tank, the etch bath and the second tank, the control unit terminating the etching when a temperature of the first etchant reaches a termination temperature;

undiluted HF solution tank to be connected to the first tank to supply ~~[[the]]~~ an undiluted HF solution to the first tank; ~~[[and]]~~

a water source connected to the first tank through a water supply pipe to supply ~~[[the]]~~ a de-ionized water to the first tank~~[[,]]~~; and

a pump connected to the connection passage for pumping the diluted etchant from the second tank to the first tank,

wherein the undiluted HF solution, the de-ionized water, and the separated diluted etchant are respectively supplied to the first tank from the undiluted HF solution tank, the water source, and the second tank to ~~[[from]]~~ from the first etchant,

wherein the amount of the undiluted HF solution, the de-ionized water, and the separated diluted etchant being controlled by the control unit controlling the first tank is based on the concentration measured by the concentration measuring device.

2. (Currently Amended): The etching apparatus according to claim 1, wherein the ~~etch bath includes a~~ temperature sensor ~~for sensing~~ senses a target temperature to stop etching the glass substrate.

3. (Cancelled)

4. (Currently Amended): The etching apparatus according to claim 1, further comprising:

an etching solution source for supplying an etching solution to the first tank; ~~and a water supply for supplying water to the first tank.~~

5. (Previously Presented): The etching apparatus according to claim 4, wherein the first tank includes a first amount of the first etchant of a concentration from the etching

solution, a second amount of the water, and a third amount of the diluted etchant.

6. (Original): The etching apparatus according to claim 4, wherein the etching solution includes HF solution.

7-8. (Cancelled)

9. (Previously Presented): The etching apparatus according to claim 1, wherein the outlet pipe is connected to a bottom of the second tank, and the bottom portion of the second tank has a cone shape.

10-26. (Cancelled)